Editorial Preface

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In this 20th issue of the International Journal of Information Technology and the Systems Approach (IJITSA), we report four high-quality research papers. The third and fourth papers were accepted as part of the special issue on "*Computing Challenges on IoT and Pervasive Systems*", co-edited by Luiz A. Steffenel, at the University of Reims Champagne-Ardenne, France, and Manuele Kirsch Pinheiro, at the University of Paris 1 Panthéon-Sorbonne, France. The first and second papers were accepted as regular submissions.

The first paper *Automatic Pattern Proposition in Transformation Life Cycle* is authored by Mahsa Sadat Panahandeh and Bahman Zamani, both at the University of Isfahan, Iran. These authors reported a method that automatically proposes and applies transformational patterns in the design and implementation phases of the software development life cycle. They advance on previous similar semi-automatic methods. The authors evaluated also automatically the method with metrics regarding quality of transformation specification and design, modularity, simplicity of transformation, efficiency, redundancy, duplication, complexity, execution time and memory usage. Their method is reported with positive improvements on such metrics. This paper, thus, contributes to the advance on software engineering automated design methods.

The second paper entitled *Privacy Aware Access Control: A Literature Survey & Novel Framework* is authored by Rekha Bhatia at Punjabi University Regional Centre, India, and Manpreet Singh at Chandigarh College of Engineering and Technology, India. The authors reviewed current security access mechanisms in the arena of web service-based applications. They found benefits and shortcomings, and thus they advance with the proposal of a novel framework on privacy and secure access based on the recent Hippocratic database concept. The main contribution of authors is the creation of awareness on keeping privacy on web service-based applications through potential solutions, such as the proposed in this paper from a high-level view. Thus, the authors contribute to the software engineering field with another potential overall solution to the relevant dual problem of keeping security and privacy status from users of web service-based applications.

The next two papers were accepted as part of the special issue on "*Computing Challenges on IoT and Pervasive Systems.*" This special issue pursued at promoting and disseminating the recent advances in the field of computing and data management on Internet of Things (IoT) and Pervasive Systems, both at academic and industry level, with a special focus on dynamicity and scalability issues.

In the next 25 years, most of the things and devices we interact with will be linked to a global computing infrastructure (Broy & Schmidt, 2014). This massive integration of communicating capabilities on physical objects symbolizes the advent of the Internet of Things (IoT). The IoT represents a new tendency on IT industry, in which physical environment is populated by interconnected and communicating objects, capable of interacting with each other and with the environment itself. The strength of this concept lies in the seamlessly integration of sensors, actuators and other devices in the

environment in a large scale, allowing interacting and collecting information from this. According to Sundmaeker et al. (2010), things on the IoT are expected to become active, participating in business, information and social process due to their high pervasiveness level (Steffenel & Kirsch-Pinheiro, 2015).

Thus, in the third paper entitled *Fault-recovery and Coherence in Internet of Things Choreographies* and authored by Sylvain Cherrier, at the Universté Paris Est Marne la Vallée, France, and Yacine M. Ghamri-Doudane, at the Université de la Rochelle, France, the authors addressed a relevant problem presented in the emergent IoT systems: desynchronizations of their components. While services orchestrations have a unique central point of control, in services choreographies the control is spread it. The authors built up their previous development framework for IoT based on choreographies, through a new technique for that IoT programmers can add coherence control mechanisms in order to keep the correct logical state in objects involved in the IoT application. The authors present finally a trade-off analysis between the overhead by checking coherence and the expected and required reliability of the IoT application. Hence, this paper contributes to the software engineering field in the topics of control of web services choreographies.

Finally, in the fourth paper entitled *Fog Caching and a Trace-Based Analysis of its Offload Effect*, which is authored by Marat Zhanikeev, at Tokyo University of Science, Japan, is addressed another relevant technical and performance problem found in the emergent Cloud computing platforms: caching performance. In contrast with Content Delivery Networks (CDNs), which count already with effective methods for caching of content replicas or forwarding requests by years of research and development, in the Cloud platforms, this problem presents a new distribution environment, and already known caching techniques cannot be applied directly. The author studied a particular subclass of Clouds located at network edge that are known as Fog Clouds. He found performance improvement in the Local Analysis by using the proposed caching mechanism, and that a centralized optimization technique provides a better performance than a distributed coordination one with the current Cloud technology. Hence, the author contributes with the software engineering and systems engineering discipline by providing an innovative mechanism for caching in Clouds platforms (in particular for Fog Clouds).

We consider that this 20th IJITSA issue contributes –as past issues- to advance our scientific and practical knowledge of structures, mechanisms, and plausible solutions on relevant theoretical and real problems found in the fields of Information Technology, Software Engineering, Systems Engineering or Philosophy of System Sciences, from an interdisciplinary systems paradigm (Mora et al., 2008). High-quality research papers that contribute to this aim are welcome in this journal. Finally, we (Guest Editors and Editor-in-Chief) express our sincere gratitude to the paper authors, reviewers, and IGI editorial staff, for their valuable participation and assistance.

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